

IN THE CLAIMS

Please amend the claims as follows:

1. (Currently Amended) A multi-hop communication system configured by a radio control station connected to a core network and a plurality of radio stations for relaying signals therebetween, wherein,

the radio control station comprises:

a control signal transmission/reception unit configured to transmit/receive a control signal having a lower bit rate than an information signal and for conducting communication with the plurality of radio stations; and

an information signal transmission/reception unit configured to transmit/receive the information signal;

a communication route determiner configured to determine a communication route through the multi-hop communication system for the control signal independently from a communication route through the multi-hop communication system for the information signal prior to conducting communication with the plurality of radio stations, and

the radio station comprises:

a control signal transmission/reception unit configured to transmit/receive the control signal; and

an information signal transmission/reception unit configured to transmit/receive the information signal.

2. (Canceled)

3. (Previously Presented) A radio control station connected to a core network for controlling communication by a radio station that relays a signals transmitted by other radio stations, comprising:

    a control signal transmission/reception unit configured to transmit/receive a control signal having a lower bit rate than an information signal and for conducting communication with the radio station;

    an information signal transmission/reception unit configured to transmit/receive the information signal;

    a communication route determiner configured to determine a communication route through the multi-hop communication system for the control signal independently from a communication route through the multi-hop communication system for the information signal prior to conducting communication with the plurality of radio stations.

4. (Currently Amended) [[A]] The radio control station according to claim 3, the communication route determiner determines a communication route through the multi-hop communication system for the information signal by a different independent process from the determination of the communication route through the multi-hop communication system for the control signal.

5. (Currently Amended) [[A]] The radio control station according to claim 3, the communication route determiner transmits a communication route acquisition request to the radio station for acquisition of a communication route, and the communication route determiner determines a communication route based on a response to the communication route acquisition request transmitted by the radio station.

6. (Currently Amended) [[A]] The radio control station according to claim 3, further comprising:

a communication channel controller configured to transmit a usage notification that indicates usage of a communication channel handled by the radio control station.

7. (Currently Amended) [[A]] The radio control station according to claim 3, the communication route determiner determines a communication route to the radio station and transmits a communication route determination notification that notifies the communication route to a radio station located on the communication route.

8. (Currently Amended) [[A]] The radio control station according to claim 7, the communication route determiner assigns a communication channel to be used in the radio station located on the determined communication route.

9. (Previously Presented) A radio station conducting communication via a radio control station connected to a core network, comprising:

a control signal transmission/reception unit configured to transmit/receive the control signal having a lower bit rate than an information signal and for conducting communication with the radio station;

an information signal transmission/reception unit configured to transmit/receive the information signal; and

a communication route determiner configured to determine a communication route through the multi-hop communication system for the control signal independently from a

communication route through the multi-hop communication system for the information signal prior to conducting communication with the plurality of radio stations.

10. (Currently Amended) [[A]] The radio station according to claim 9, the communication route determiner transmits a usage inquiry to the radio station for inquiring usage of a communication channel handled by the radio control station and transmits/receives the information signal according to a usage notification that is a response to the usage inquiry.

11. (Currently Amended) [[A]] The radio station according to claim 9, further comprising:

a decision unit configured to decide whether or not communication is directly conducted with the radio control station based on a reception level of the control signal received by the control signal transmission/reception unit.

12. (Currently Amended) [[A]] The radio station according to claim 11, the decision unit changes a threshold for the reception level according to a transmission speed of the information signal and to decide whether or not communication is directly conducted with the radio control station based on a result of comparison of the reception level and the threshold.

13. (Currently Amended) [[A]] The radio station according to claim 9, further comprising:

a first relay controller configured to transmit a relay control signal to other station for requesting a relay of the information signal and to set a communication route to the radio

control station via the other station according to a response relay control signal that is a response to the relay control signal.

14. (Currently Amended) [[A]] The radio station according to claim 13, further comprising:

a communication route selector configured to select a radio station satisfying a prescribed condition regarding a communication state if a plurality of the other radio station transmitted the response relay control signal.

15. (Currently Amended) [[A]] The radio station according to claim 9, further comprising:

a second relay controller configured to receive a relay control signal requesting a relay of the information signal from other station, to transmit a response relay control signal that is a response to the relay control signal and to set a communication route from the other radio station to the radio control station.

16. (Currently Amended) [[A]] The radio station according to claim 15, the second relay controller transmits the response relay control signal notifying ability of the relay of the information signal based on a reception level of the received response relay control signal.

17. (Currently Amended) [[A]] The radio station according to claim 14, wherein an information indicating a number of hops from the other radio station to the radio control station is included in the response relay control signal, and the communication route selector selects a radio station based the number of hops included in the response relay control signal.

18. (Currently Amended) [[A]] The radio station according to claim 14, wherein an information indicating an interference level is included in the response relay control signal, and the communication route selector selects a radio station based the interference level included in the response relay control signal.

19. (Previously Presented) A multi-hop communication method used in a system configured by a radio control station connected to a core network and radio stations that relay a signal transmitted from other radio stations, comprising the steps of:

transmitting a usage inquiry from the radio station for inquiring usage of a communication channel handled by the radio control station using a control signal having a lower bit rate than an information signal and for conducting communication with the radio control station and for conducting communication with the radio station;

determining a communication route through the multi-hop communication system for the control signal and independently from a communication route through the multi-hop communication system for the information signal by the radio control station,

transmitting from the radio station a usage notification indicating usage of the communication channel handled by the radio control station; and

transmitting/receiving an information signal to/from the radio station and the radio control station using the communication route determined based on the usage notification.

20. (Currently Amended) [[A]] The multi-hop communication system according to claim 1, the communication route determiner determines whether or not the communication route for the information signal can be set based on a reception level of the control signal.

21. (Currently Amended) [[A]] The radio control station according to claim 3, the communication route determiner determines whether or not the communication route for the information signal can be set based on a reception level of the control signal.

22. (Currently Amended) [[A]] The multi-hop communication method according to claim 19, in the determining step, whether or not the communication route for the information signal can be set is determined based on a reception level of the control signal.